

Listing of Claims

1. (original) A composite structure comprising:
a first nonwoven layer, having a first surface and a second surface opposite the first surface; and
a rigidifying component applied to one surface of the nonwoven layer;
wherein the rigidifying component provides sufficient stiffness to the composite such that the structure can be self-pleatable yet maintain flexibility.
2. (original) The composite of Claim 1, wherein the rigidifying component comprises filaments of a polymer or polymer blend, said filaments having a cross-sectional shape.
3. (original) The composite of Claim 1, wherein the rigidifying component comprises polymer filaments having a diameter of at least about 0.004 inches.
4. (original) The composite of Claim 1, wherein the rigidifying component comprises polymer filaments having a diameter of about 0.040-0.12 inches.
5. (original) The composite of Claim 1, wherein the rigidifying component comprises a wax or blend.
6. (original) The composite of Claim 1, wherein the rigidifying component further includes a filler material.
7. (original) The composite of Claim 1, wherein the rigidifying component contains filler in an amount between about 10 to about 80% by weight.
8. (original) The composite of Claim 1, wherein the rigidifying component contains filler in an amount between about 30 to about 50% by weight.
9. (original) The composite of Claim 1, wherein the rigidifying component is selectively applied to the structure.

10. (original) The composite of Claim 1, wherein the structure further comprises a second nonwoven layer.
11. (original) The composite of Claim 10, wherein the second nonwoven layer is positioned adjacent to the first layer.
12. (original) The composites of Claim 10, wherein the second nonwoven layer is adjacent to the rigidifying component wherein the rigidifying component adheres the first nonwoven layer to the second nonwoven layer.
13. (original) The composite of Claim 1, wherein the rigidifying component is an adhesive.
14. (original) The composite of Claim 1, wherein the nonwoven layers are comprised of a spunbond web, bicomponent spunbond web, meltblown web, coformed web or bonded carded web.
15. (original) The composite of Claim 2, wherein the filaments of the nonwoven layers have a variety of cross-sectional shapes.
16. (original) The composite of Claim 15, wherein at least some of the filaments have asymmetrical cross-sectional shapes.
17. (original) The composite of Claim 15, wherein the filaments having asymmetrical cross-sectional shapes are selected to provide desired web stiffness and fold retention in the composite.
18. (original) The composite of Claim 1, wherein the composite is a filter media.
19. (original) A filter media comprising:
 - a first layer of nonwoven material; and
 - a stiffening component, said stiffening component applied to the material;
 - wherein the filter media is self-pleatable; and
 - wherein the stiffening component provides sufficient resilience to the filter media to maintain the pleats.

20. (original) The filter media of Claim 19, further comprising a second layer of nonwoven material.

21. (currently amended) The filter media of Claim 19, wherein the stiffening-rigidifying component comprises filaments of a polymer or polymer blend, said filaments having a cross-sectional shape.

22. (currently amended) The filter media of Claim 19, wherein the stiffening-rigidifying component comprises a wax or blend.

23. (currently amended) The filter media of Claim 19, wherein the stiffening-rigidifying component further includes a filler material.

24. (original) The filter media of Claim 20, wherein the stiffening component is applied between the first and second layer of the nonwoven material so as to permit bonding of the layers, and wherein the stiffening component provides for bonding between the first layer of nonwoven material and the second layer of nonwoven material.

25. (original) The media of Claim 20, wherein the first and second nonwoven layers are adjacent to each other and the stiffening component is applied to either the first or the second nonwoven layer.

26. (original) The filter media of Claim 19, wherein the stiffening component is selectively applied to provide the necessary bonding and to minimize the effect of the stiffening component on the filtration efficiency and pressure drop of the media.

27. (original) The filter media of Claim 19, wherein the nonwoven layers are comprised of a spunbond web, bicomponent spunbond, meltblown web, coformed web or bonded carded web.

28. (withdrawn) A method for forming a composite material adapted for uses such as a filtration media, said method comprising:

providing a first layer of nonwoven material, the first layer having a first surface and a second surface;

providing a rigidifying component; and

applying the rigidifying component to the nonwoven material;

wherein the rigidifying component bonds to the nonwoven material together so as to create a rigid media.

29. (withdrawn) The method of Claim 28, wherein the method further comprises the step of providing a second layer of nonwoven material.

30. (withdrawn) The method of Claim 29, wherein the method further comprises the step of applying the second layer of nonwoven material to the rigidifying component.

31. (withdrawn) The method of Claim 29, wherein the method further comprises the step of applying the second layer of nonwoven material to the first nonwoven layer.

32. (withdrawn) The method of Claim 29, wherein the between the steps of providing a first layer of nonwoven material and the step of applying the rigidifying component to the nonwoven material, the method further comprises the steps of:

providing a second layer of nonwoven material; and

applying the second layer of nonwoven material to the first nonwoven layer;

wherein the rigidifying component may be applied to either the first or second layer of nonwoven material.

33. (withdrawn) The method of Claim 30, where in the rigidifying component bonds the layers of the nonwoven material together.

34. (withdrawn) The method of Claim 28, wherein the method further comprises selectively applying the rigidifying component to the nonwoven material, such that when bonding occurs the filtration efficiency and pressure drop of the composite material is not adversely affected.

35. (withdrawn) The method of Claim 28, wherein the method further comprises the step of folding or pleating the composite material.

36. (withdrawn) The method of Claim 29, wherein the step of providing the first layer of nonwoven material further comprises in-line or off-line formation of the first layer.

37. (withdrawn) The method of Claim 29, wherein the step of providing the second layer of nonwoven material further comprises in-line or off-line formation of the second layer.

38. (withdrawn) The method of Claim 28, wherein the composite material comprises a filter media product or component thereof.